(b) inoculating the immunized mouse with *Chlamydia*;

wherein the polypeptide which prevents or lessens the severity of *Chlamydia* infection in the immunized mouse compared to a non-immunized control mouse is identified.

REMARKS

Applicant respectfully request that the foregoing amendments to Claims 3, 7, 12-16, 20, 25, 31-34 and 36-39 be entered in order to avoid this application incurring a surcharge for the presence of one or more multiple dependent claims.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

3. (Amended) A nucleic acid molecule comprising a nucleic acid sequence which is anti-sense to the nucleic acid molecule of claim 1 [or 2].

7. (Amended) A nucleic acid molecule according to [any one of claims 1 to 6] claim 1, operatively linked to one or more expression control sequences.

8. (Amended) A vaccine comprising a vaccine vector and at least one first nucleic acid selected from any of:

(i) SEQ ID Nos: 1 to 10;

(ii) a nucleic acid sequence which encodes a polypeptide encoded by any one of SEQ ID Nos: 1 to 10;

(iii) a nucleic acid sequence comprising at least 38 consecutive nucleotides from any one of the nucleic acid sequences of (i) and (ii);

(iv) a nucleic acid sequence which encodes a polypeptide which is at least 75% identical in amino acid sequence to the polypeptide encoded by any one of SEQ ID Nos: 1 to 10;

(v) a nucleic acid sequence which encodes a polypeptide whose sequence is set forth in any one of SEQ ID Nos: 11 to 16;

(vi) a nucleic acid sequence which encodes an immunogenic fragment comprising at least 12 consecutive amino acids from any one of SEQ ID Nos: 11 to 16; and

(vii) a nucleic acid sequence which encodes a polypeptide as defined in (i) to (v) or an immunogenic fragment as defined in (vi) which has been modified without loss of immunogenicity, wherein said modified polypeptide or fragment is at least 75% identical in amino acid sequence to the corresponding polypeptide of (i) to (v) or the corresponding fragment of (vi);

wherein each first nucleic acid is capable of being expressed [and wherein the vaccine optionally comprises a second nucleic acid encoding and capable of expressing an additional polypeptide which enhances the immune response to the polypeptide expressed by the first nucleic acid].

9. (Amended) A vaccine comprising a vaccine vector and at least one first nucleic acid encoding a fusion protein, wherein the fusion protein comprises:

(a) a first polypeptide selected from any of:

(i) a polypeptide encoded by any one of SEQ ID Nos: 1 to 10;

(ii) a polypeptide encoded by a nucleic acid sequence comprising at least 38 consecutive nucleotides from any one of SEQ ID Nos: 1 to 10;

(iii) a polypeptide which is at least 75% identical in amino acid sequence to the polypeptide encoded by any one of SEQ ID Nos: 1 to 10;

(iv) a polypeptide whose sequence is set forth in any one of SEQ ID Nos: 11 to 16;

(v) an immunogenic fragment comprising at least 12 consecutive amino acids from any one of SEQ ID Nos: 11 to 16; and

(vi) a polypeptide as defined in (i) to (iv) or an immunogenic fragment as defined in (v) which has been modified without loss of immunogenicity, wherein said modified polypeptide or fragment is at least 75% identical in amino acid sequence to the corresponding polypeptide of (i) to (iv) or the corresponding fragment of (v); and

(b) a second polypeptide;

wherein each first nucleic acid is capable of being expressed [and wherein the vaccine optionally comprises a second nucleic acid encoding and capable of expressing an additional polypeptide which enhances the immune response to the first polypeptide].

12. (Amended) The vaccine of [any one of claims 8 to 11] claim 8 wherein each first nucleic acid is operatively linked to one or more expression control sequences.

13. (Amended) A vaccine [comprising at least one first nucleic acid] according to [any one of claims 1, 2, and 4 to 7 and a vaccine vector] claim 8 wherein each first nucleic acid is expressed as a polypeptide, and wherein the vaccine [optionally comprising] comprises a second nucleic acid encoding an additional polypeptide which enhances the immune response to the polypeptide expressed by [said] the first nucleic acid.

14. (Amended) The vaccine of [any one of claims 8 to 13] claim 13 wherein the second nucleic acid encodes an additional *Chlamydia* polypeptide.

15. (Amended) A pharmaceutical composition comprising a nucleic acid according to [any one of claims 1 to 7] claim 1 and a pharmaceutically acceptable carrier.

16. (Amended) A pharmaceutical composition comprising a vaccine according to [any one of claims 8 to 14] claim 8 and a pharmaceutically acceptable carrier.

20. (Amended) A polypeptide encoded by a nucleic acid sequence according to [any one of claims 1, 2 and 4 to 7] claim 2.

25. (Amended) A method for producing a polypeptide of claim 20, [or 21, or a fusion protein of any one of claims 22 to 24] comprising the step of culturing a unicellular host [of claim 17] transformed with a nucleic acid encoding a polypeptide of claim 20.

26. (Amended) An antibody against the polypeptide of claim 20 [or 21, or against a fusion protein of any one of claims 22 to 24].

27. (Amended) A vaccine comprising at least one first polypeptide selected from any of:

(i) a polypeptide encoded by any one of SEQ ID Nos: 1 to 10;

(ii) a polypeptide encoded by a nucleic acid sequence comprising at least 38 consecutive nucleotides from any one of SEQ ID Nos: 1 to 10;

(iii) a polypeptide which is at least 75% identical in amino acid sequence to the polypeptide encoded by any one of SEQ ID Nos: 1 to 10;

(iv) a polypeptide whose sequence is set forth in any one of SEQ ID Nos: 11 to 16;

(v) an immunogenic fragment comprising at least 12 consecutive amino acids from any one of SEQ ID Nos: 11 to 16; and

(vi) a polypeptide as defined in (i) to (iv) or an immunogenic fragment as defined in (v) which has been modified without loss of immunogenicity, wherein said modified polypeptide or fragment is at least 75% identical in amino acid sequence to the corresponding polypeptide of (i) to (iv) or the corresponding fragment of (v)[:

wherein the vaccine optionally comprises an additional polypeptide which enhances the immune response to the first polypeptide].

28. (Amended) A vaccine comprising at least one fusion protein, wherein the fusion protein comprises:

(a) a first polypeptide selected from any of:

(i) a polypeptide encoded by SEQ ID No: 1;

(ii) a polypeptide encoded by a nucleic acid sequence comprising at least 38 consecutive nucleotides from SEQ ID No: 1;

(iii) a polypeptide which is at least 75% identical in amino acid sequence to the polypeptide encoded by SEQ ID No: 1;

(iv) a polypeptide whose sequence is set forth in SEQ ID No: 2;

(v) an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2; and

(vi) a polypeptide as defined in (i) to (iv) or an immunogenic fragment as defined in (v) which has been

modified without loss of immunogenicity, wherein said modified polypeptide or fragment is at least 75% identical in amino acid sequence to the corresponding polypeptide of (i) to (iv) or the corresponding fragment of (v); and

(b) a second polypeptide [:

wherein the vaccine optionally comprises an additional polypeptide which enhances the immune response to the first polypeptide].

31. (Amended) A vaccine comprising at least one first polypeptide according to [any one of claims 20 to 24, optionally comprising] claim 20 and an additional polypeptide which enhances the immune response to the first polypeptide.

32. (Amended) The vaccine of [any one of claims 27 to 31] claim 31 wherein the additional polypeptide comprises a *Chlamydia* polypeptide.

33. (Amended) A pharmaceutical composition comprising a polypeptide according to [any one of claims 20 to 24] claim 20 and a pharmaceutically acceptable carrier.

34. (Amended) A pharmaceutical composition comprising a vaccine according to [any one of claims 27 to 32] claim 27 and a pharmaceutically acceptable carrier.

36. (Amended) A method for preventing or treating *Chlamydia* infection [using] comprising administering to a patient an effective amount of:

(a) [the] a nucleic acid [of any one of claims 1 to 7] according to claim 2;

(b) [the vaccine of any one of claims 8 to 14 and 27 to 32] a vaccine comprising a vaccine vector and at least one first nucleic acid according to claim 2;

(c) [the] a pharmaceutical composition [of any one of claims 15, 16, and 33 to 35] comprising a nucleic acid according to claim 2 and a pharmaceutically acceptable carrier;

(d) [the] a polypeptide [of claim 20 or 21, or a fusion protein of any one of claims 22 to 24] encoded by a nucleic acid according to claim 2; or

(e) [the] an antibody [of claim 26] against a polypeptide encoded by a nucleic acid according to claim 2.

37. (Amended) A method of detecting *Chlamydia* infection comprising the step of [assaying] contacting a body fluid of a mammal to be tested, with a component selected from any one of:

(a) [the] a nucleic acid [of any one of claims 1 to 7] according to claim 2;

(b) [the] a polypeptide [of claim 20 or 21, or a fusion protein of any one of claims 22 to 24] encoded by a nucleic acid according to claim 2; and

(c) [the] an antibody [of claim 26] against a polypeptide encoded by a nucleic acid according to claim 2.

38. (Amended) A diagnostic kit comprising instructions for use and a component selected from any one of:

(a) [the] a nucleic acid [of any one of claims 1 to 7] according to claim 2;

(b) [the] a polypeptide [of claim 20 or 21, or a fusion protein of any one of claims 22 to 24] encoded by a nucleic acid according to claim 2; and

(c) [the] an antibody [of claim 26] against a polypeptide encoded by a nucleic acid according to claim 2.

39. (Amended) A method for identifying a polypeptide of claim 20 [or 21, or a fusion protein of any one of claims 22 to 24] which induces an immune response effective to prevent or lessen the severity of *Chlamydia* infection in a mammal previously immunized with polypeptide, comprising the steps of:

(a) immunizing a mouse with the polypeptide [or fusion protein] of claim 20; and

(b) inoculating the immunized mouse with *Chlamydia;*

wherein the polypeptide [or fusion protein] which prevents or lessens the severity of *Chlamydia* infection in the immunized mouse compared to a non-immunized control mouse is identified.